

ANNUAL REPORT 2010

SOUTH AMERICAN BIOLOGICAL CONTROL LABORATORY

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE



Reporting period: July 2009 to June 2010

PRELIMINARY RESULTS
NOT FOR PUBLICATION

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Introduction

This report summarizes the scientific, academic and miscellaneous activity at SABCL from July 1, 2009 to June 30, 2010, including major work on the following targets: Waterhyacinth (*Eichhornia crassipes*), Brazilian peppertree (*Schinus terebinthifolius*), balloon vine (*Cardiospermum grandiflorum*), Brazilian waterweed (*Egeria densa*), water primrose (*Ludwigia hexapetala*), Lippia (*Phyla canescens*), parkinsonia (*Parkinsonia aculeata*), water lettuce (*Pistia stratiotes*), water pennywort (*Hydrocotyle ranunculoides*), imported fire ants (*Solenopsis invicta*, *S. richteri*), cactus moth (*Cactoblastis cactorum*), little fire ant (*Wasmannia auropunctata*), and cactus mealybug (*Hypogeococcus pungens*).

SABCL has worked in close contact with the ARS counterparts, R. Vander Meer, S. Porter, D. Oi, S. Valles, D. Shoemaker (CMAVE, Gainesville, FL); T. Center, P. Tipping, G. Wheeler, M. Rayamajhi (IPRL, Ft. Lauderdale, FL); R. Carruthers, L. Anderson, B. Grewel (EIWRU, Albany and Davis, CA); J. de León, (BIRU, Weslaco, TX); S. Hight (CMAVE, Tallahassee, FL); J. Carpenter (CPMR, Tifton, GA), P. Follett (PBARC, Hilo, HI); R. Goenaga, D. Jenkins, USDA-ARS-TARS, Mayaguez, Puerto Rico; H. Díaz-Soltero (USDA-SIPC); and J. Bentz-Blanco (APHIS-PPQ). Their support has been essential for the current SABCL program.

Important extramural financial and/or scientific support was provided by M. Julien, S. Schooler, T. Heard (CSIRO, Australia), J. Heraty (U. of California, Riverside), G. Ervin and C. Brooks (Mississippi State University, Starkville), D. Djeddour, M. Seier and R. Shaw, CABI-Egham, Surrey, UK, and A. Estoup and O. Rey, CBGP, Montferrier, France.

In Argentina, SABCL interacted with: N. Cabrera, A. Marino de Remes Lenicov and S. Paradell (U. of La Plata); E. Virla (PROIMI, Tucumán), G. Valladares (U. of Córdoba); E. Greizerstein and F. Font (U. of Buenos Aires); G. Traversa and F. Anderson (U. of Bahía Blanca), F. Cuezco (Instituto Lillo, Tucumán); L. Claps, (INSUE, Tucumán), Conservation Land Trust; A. Marvaldi (IADIZA, Mendoza).

News

ARS Scientists at the Invasive Plant Research Laboratory (IPRL), Ft. Lauderdale, Florida released the planthopper, *Megamelus scutellaris*, to control waterhyacinth, *Eichhornia crassipes*. The agent was discovered and developed by scientists at SABCL in Argentina in cooperation with IPRL. One major release of this insect occurred on 18 May 2010 near Palatka, FL. A second release was conducted on 4 June 2010 north of Ft. Lauderdale, FL, during the visit of Alejandro Sosa, the scientist responsible for the project at SABCL.

The new insect species for science, *Pseudophilothrips gandolfoi*, was named in memory of Daniel Gandolfo and Javier Jara, two SABCL staff members who died tragically in a car accident in 2006 while working on Brazilian peppertree (Mound et al. 2010. Resolving cryptic species with morphology and DNA; thrips as a potential biocontrol agent of Brazilian peppertree, with a new species and overview of *Pseudophilothrips* (Thysanoptera). Zootaxa 2432: 59–68).

Luis Calcaterra got his Doctoral Degree at the University of Buenos Aires in February 2010. I congratulate him and feel proud for the accomplishment.

The SABCL web site is now officially under the main ARS site at <http://ars.usda.gov/onp/sabcl>.

Regulatory problems: Since 2003, the regulatory agencies in Argentina have been progressively demanding more requirements for the research on living organisms as candidates for biological control. At present, the legislation mandates five permits for the access to the genetic resource, field collection, transportation and exportation of candidates for biocontrol. In early 2009, one of the regulatory agencies, the *Secretaría de Ambiente y Desarrollo Sustentable* (SAyDS -- Secretariat of Environment and Sustainable Development), requested the registration of SABCL as exporter of beneficial organisms. The registration was initiated in March 2009, but it has not been implemented yet for the lack of a “legal status” of SABCL to operate in Argentina. Since December 2009, the issuing of exportation permits by the SAyDS has been interrupted affecting the entire SABCL mission. Thirteen organisms recently developed at SABCL are pending for exportation to foreign cooperators in the US, Australia, South Africa, and Europe.

In order to solve this crucial problem, in January 2010 SABCL requested the assistance of the Foreign Agriculture Service and the Environment, Science, Technology, and Health Section at the US Embassy in Buenos Aires. The US Counselors of these offices organized and participated in an important meeting in March 2010 including the SABCL Director and high-level officials of the SAyDS. As a result of the meeting, the SAyDS requested additional information at the Argentine Ministry of Foreign Affairs (MFA) regarding the legal situation of SABCL in Argentina. Since late March 2010, the issue is being discussed at the MFA between the Director for North American Affairs and representatives of the Legal Department.

The desired solution is the resumption of exportation of beneficial organisms by granting SABCL legal status from the Argentinean government and negotiating a sustainable procedure for acquisition of permits from regulatory agencies.

Location

USDA-ARS-South American Biological Control Laboratory (SABCL)
1559 Bolivar Street (B1686EFA) Hurlingham, Buenos Aires Province, Argentina
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Website: <http://ars.usda.gov/onp/sabcl>

Mission and Support

The main mission and objectives of SABCL are: (1) Search for natural enemies (NE) of weeds and insect pests, (2) Study the basic biology, ecology, and evaluate the specificity of those NE, (3) Ship selected agents to the United States or other countries, (4) Communicate and publish the results of the investigations, (5) Provide logistic support to USDA researchers and other scientists conducting investigations on biological control in Argentina, and (6) Liaison with agricultural research agencies and universities for detecting areas of potential cooperative work.

Since July 2008, the SABCL has been supervised by Dr. Daniel Strickman, Acting Director of the OBCLs. Current ARS projects have a counterpart in the US designated by National Program Leaders Drs. Kevin Hackett and John Lydon. Local support is given by the American Embassy in Buenos Aires, including the Foreign Agriculture Service and David Mergen, Agricultural Counsellor.

Staff

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Licentiate in Biological Sciences, UBA (2004)

Cristian Otamendi: Gardener and maintenance assistant, caotamendi@hotmail.com

Liliana Cruz: Janitor

Interns

The following UBA interns assisted during the reporting period: M. Dalto, M. Parisi, M. Moore, L. Chifflet, M. González Márquez, C. Mengoni Goñalons and E. Cuello.

Publications (July 2009-June 2010)

Manuscripts published

1- Julien, M.H., R.D. van Klinken, C. Xu, **A. Sosa**, G. Traversa, R. Delhey, M. Fatemi, C. Goss, E. Greizerstein. 2009. Ecology, genetics and the potential for biological control of lippia, *Phyla canescens*. Proc. 15th Biennial New South Wales Weeds Conference, 15-17 Sep, 2009, Narrabri, NSW, Australia.

2- Valles, S. M., **Varone, L.**, Ramírez, L. and **Briano, J.** 2009. Multiplex detection of *Solenopsis invicta* viruses -1, -2, and -3. J. Virol. Meth. 162: 276–279.

3- Valles, S. M., Allen, C., **Varone, L.** and **Briano, J.** 2009. Complete genome sequence of an Argentinean isolate of *Solenopsis invicta* virus 3. Virus Genes 40: 293-297.

- 4- **Calcaterra, L. A.**, F. Cuezco, S. M. Cabrera, and **J. A. Briano**. 2010. Ant diversity in the Iberá Natural Reserve: the largest wetland of Argentina. *Ann. Entomol. Soc. Am.* 103: 71-83.
- 5- Jia, X., X. Pan, **A. Sosa**, B. Li & J. Chen. 2010. Differentiation in growth and biomass allocation among three native *Alternanthera philoxeroides* varieties from Argentina. *Plant Species Biology* 25: 85–92
- 6- **Mc Kay, F.** Oleiro, M. Fourie, A. and Simelane, D. 2010. Natural enemies of balloon vine *Cardiospermum grandiflorum* (Sapindaceae) in Argentina and their potential use as biological control agents in South Africa. *Inter. J. Trop. Ins. Sci.* 30: 67-76.
- 7- Remes Lenicov, A. M. de and **M. C. Hernández**. 2010. A new species of *Taosa* (Hemiptera: Dictyopharidae) from South America associated with Water Hyacinth. *Ann. Entomol. Soc. Am.* 103: 332-340.
- 8- Triapitsyn., S. V. Huber J. T., **Logarzo, G. A.**, Berezovskiy V. V. & Aquino D. A. 2010. Review of *Gonatocerus* (Hymenoptera: Mymaridae) in the Neotropical region, with description of eleven new species. *Zootaxa* 2456: 1–243.
- 9- Virla, E. G.; **Logarzo, G. A.**; & Paradell, S. L. 2010. Occurrence of the tamarix leafhopper, *Opsius stactogalus* Fieber (Hemiptera: Cicadellidae), in Argentina. *J. Ins. Sci.* 10: 2-6.

Manuscripts in press

- 1- **Calcaterra, L. A.**, S. M. Cabrera, F. Cuezco, I. Jiménez Pérez, and **J. A. Briano**. 2010. Habitat and Grazing influence on terrestrial ant diversity in subtropical grassland and savanna of Argentina. *Ann. Entomol. Soc. Am.*
- 2- Triapitsyn, S., **A. Sosa**, **M. C. Hernández**. 2010. Egg parasitoids of *Megamelus* spp. (Hemiptera: Delphacidae) in Argentina. *Revista de la Sociedad Entomológica Argentina*.

Meetings, Seminars, Workshops, and Training

Hernández traveled to USDA-ARS-EIWRU, Davis and Albany, CA, to work on water primrose and waterhyacinth. She (1) was trained on the chromosome count technique by Joy Futrell, (2) discussed with Brenda Grewell and Futrell potential cooperative work with SABCL on cytological and morphological studies of WP populations in Argentina, (3) discussed with Grewell and R. Carruthers future actions to understand the ecology of WP in Argentina, prior to the selection of candidates, (4) gave a seminar at UC Davis, Dept. Plant Sciences, Sect. of Crop and Ecosystem Sciences on Waterhyacinth biocontrol work in Argentina, and (5) discussed with R. Carruthers current situation of the “old” weevils released for biocontrol and future actions with new releases. Aug 2-16, 2009.

Logarzo and **Varone** traveled to the US and Mexico. They (1) attended the Mexico-USA *Cactoblastis cactorum* Conference, Cancún, Quintana Roo, México, and presented: “Mortality factors in natural populations of *Cactoblastis cactorum* feeding in native and exotic (Mexican) *Opuntia* spp. in Argentina (Logarzo) and “Oviposition preference and larval performance of *C.*

cactorum on native and exotic *Opuntia* from Argentina (Varone); (2) visited USDA-ARS-CMAVE Tallahassee, and field sites to work on *C. cactorum* with Stephen Hight; (3) visited Florida's DPI and USDA-ARS-CMAVE, Gainesville, FL. to see the rearing facilities of *C. cactorum* and phorid flies. They presented their work on *C. cactorum*. Varone discussed future research plans on fire ant viruses with Steven Valles at CMAVE; (4) visited USDA-ARS-CMRU Tifton, GA. and discussed future plans of the research of *C. cactorum* in Argentina with ARS and Mississippi State University researchers. James Carpenter showed the rearing facility for *C. cactorum*; (5) visited MSU, Starkville and discussed future plans on *C. cactorum* with Gary Ervin and Christopher Brooks. Aug 4-18, 2009.

Clech-Goods, Schooler, and **Sosa**. Enemy release or enemy reduction: Biogeo-community studies: Combining biogeographic and community studies. The 10th International Congress of Ecology, Brisbane, Australia. Aug 16-21, 2009,

Sosa attended the 15th Biennial New South Wales Weeds Conference, Sep 15-17, 2009, Narrabri, NSW, Australia. (see manuscripts published).

Sosa lectured at the School of Natural and Exact Sciences, University of Buenos Aires on "Control of invasive plants" as part of the postgraduate course, Biological Invasions. Oct 27, 2009

Cabrera participated in the Workshop on Risk Assessment Criteria for GMOs, International Life Sciences Institute (ILSI). Buenos Aires, Aug 12, 2009.

Cabrera participated in the Programa de Apoyo al Fortalecimiento Institucional del SENASA-CE (National Agricultural Sanitary Service – European Community Cooperation Commission). He was appointed to appraise and recommend needed changes in the current Argentine legislation on beneficial organisms research and exchange, in order to stimulate biocontrol and other environmentally friendly techniques in Argentina. He also gave a 20-hour training course in bio control and ecological principles to SENASA officials. Buenos Aires, Nov 16–Dec 4, 2009.

International Organization for Biological Control. Biological Control in the Americas: past, present and future course. Niagara Falls, Ontario, Canada. Moderator of the Session: Weed biocontrol – Why is it so successful? Presentation of the conferences: 1) Foreign exploration, inter-country projects and in situ biological assessment (**G. Cabrera Walsh**, R. Carruthers H. Norambuena & J. DeLoach), and 2) Biological control of invasive weeds in Latin America (H. Norambuena & **G. Cabrera Walsh**). May 11-13, 2010.

Ecological Invasions. Department of Ecology, Genetics and Evolution, School of Natural Sciences, Univ. of Buenos Aires. **Varone** took this course as part of her Doctoral program. Oct 19-30, 2009.

XIX Simpósio de Mirmecologia e I Simpósio Franco-Brasileiro de Mirmecologia, Ouro Preto, Minas Gerais, Brasil. Presentation of Works: 1) Occurrence of *Wasmannia auropunctata* (Hymenoptera: Formicidae) in forests of northern Argentina (**Calcaterra**, **Briano**, Cuezio, Ramírez, Follet); 2) Effect of livestock grazing on terrestrial ant diversity in subtropical habitats

of Argentina, with a special interest in the fire ant *Solenopsis invicta* (**Calcaterra**, Cabrera, Cuezco, Pérez-Jiménez, **Briano**). Nov 17-21, 2009.

Archbold Tropical Research and Education Center, Springfield, Dominica. **Varone** co-participated in the second study of *Orasema* spp., parasitoids of the little fire ant, *Wasmannia auropunctata*. The research was supported by Dr. J. Heraty, UCA-Riverside. Several sites with *O. costaricensis* or *O. minutissima* were located to clarify their interaction with *W. auropunctata*. May 8-25, 2010.

V Argentine Congress of Citrus-growing. Catalinas Park Hotel, San Miguel de Tucumán. Presentation of the works: 1) Two founding events identified in asian citrus psyllid populations collected in the Americas (by de León, J. H., M. Sétamou, G. A. Gastaminza, J. Buenahora, C. R. Wlosek Stañgret, P. T. Yamamoto and **G. A. Logarzo**); 2) Extensive haplotype variation in *Tamarixia radiata* populations from the Americas: multiple groups (by de León, J. H., G. A. Gastaminza, J. R. P. Parra, M. Sétamou, **G. A. Logarzo**, J. Buenahora, C. R. Wlosek Stañgret, y P. T. Yamamoto). Jun 2-4, 2010.

Miscellaneous activity

Briano discussed with Eduardo Botto, Director of the Insectary at INTA Castelar, the use of their quarantine facilities. July 20, 2009.

Cabrera and Briano were appointed as external surveyors for the INTA (National Agricultural Institute) project: Integrated Management of Forest Pests and Pathogens. Buenos Aires, July-August 2009.

Briano designed and submitted to SENASA the plans of a quarantine facility for arthropods at SABCL. July 30, 2009.

Logarzo and Briano collected leaves of *Solanum elaeagnifolium* on silica gel from several field sites in Argentina. The samples were shipped to ARS-EBCL in France for DNA extractions within the program on biological control of the weed in Greece and Australia. Sep 2009.

Briano co-participated in a meeting at the Ministry of Agriculture, Argentina with L. Basso (Secretary of Agriculture), A. Silva (Chief of Staff), R. Blasetti (Director of International Affairs), D. Mergen (FAS, Agriculture Counselor) and F. Pirovano (FAS, Agriculture Specialist). The main topic was to discuss progress on the MOU. Nov 3, 2009.

Briano co-participated in the Consultative Committee on Agriculture at the Ministry of Agriculture. The relationship between the SABCL and the Argentine agencies was emphasized. Nov 9, 2009.

Otamendi received an award for outstanding performance at the ARS-SABCL during the Annual Award Ceremony, US Embassy-Buenos Aires. Nov 18, 2009.

Graduation of SABCL intern M. Manteca Acosta. **Varone** directed her program on Biological Sciences at the University of Buenos Aires and **Sosa** was part of the graduation committee. The

thesis entitled “Development of *Cactoblastis cactorum* (Lepidoptera: Pyralidae) on *Opuntia* spp. (Cactacea) exotic and native of Argentina”. Dec 17, 2009.

The Foreign Agriculture Service, US Embassy Buenos Aires, invited SABCL to participate in the USDA Cochran Fellowship Program. SABCL preselected 4 local professionals from SENASA and INTA to be trained in the US for 2 weeks during August 2010 on “Pre and post release studies of organisms for biological control”. The training location selected was the ARS-Invasive Plants Research Laboratory, Ft. Lauderdale, FL. January 2010.

Calcaterra got his Doctoral Degree on Biological Sciences at the University of Buenos Aires. The dissertation entitled: Distribución y abundancia de la hormiga colorada *Solenopsis invicta* en Argentina: sus interacciones con hormigas competidoras y moscas parasitoides (*Pseudacteon* spp.). **Briano** was the director of his program. Feb 24, 2010.

Briano co-participated in a meeting at the Argentine Secretariat of Environment to discuss regulatory problems with Sergio LaRocca (Subsecretario de Planificación y Política Ambiental), Oscar Padín (Director Nacional de Ordenamiento Ambiental), David Mergen (Ag. Counselor, US Embassy), Russell Menyhart (Environmental Affairs Office, US Embassy). March 12, 2010.

Briano prepared and submitted the Project Plan Outline 2010-2015 for SABCL to ARS Headquarters. After approval of the outline, the Project Plan 2010-2015 was prepared and submitted to OSQR for revision, which is expected for July 2010. March 2010.

Length of Service Awards. **Hernández** and **Sosa** received a certificate for their 10 years of service with ARS. May 7, 2010.

SABCL staff participated in a driving course mandated for all US Embassy personnel. May 7, 2010.

Logarzo reviewed abstracts as scientific committee member of the IV Reunión Binacional de Ecología (Argentina-Chile). May 2010.

Visitors

Mic Julien, CSIRO, Australia. Julien, Briano, Sosa and Cabrera discussed projects. Sosa, Julien and Traversa surveyed Buenos Aires, Entre Ríos, Santa Fé, Chaco, Corrientes, Formosa and Misiones Provinces to collect insects for rearing and host specificity studies. 15 Feb-5 Mar 2010.

Seigo Higashi, Hironori Sakamoto, Hokkaido University, Sapporo, and Eiriki Sunamura, University of Tokio, Japan. They visited facilities, surveyed eastern Argentina for the Argentine ant, *Linepithema humile*, and discussed potential cooperation. Feb 25-Mar 22, 2010.

Marion Seier and Ghislaine Cortat, CABI Europe. They travelled with Cabrera in eastern Argentina for natural enemies of water pennywort, *H. ranunculoides*. 10-20 March 2010.

Silvana Toledo, Estación O. Colombres, Tucumán, Argentina. Visited facilities. 11 Mar 2010.

Tim Heard, CSIRO, Australia. Heard, Parisi and Mc Kay surveyed northern Argentina for natural enemies of *Parkinsonia aculeata*. 15-25 Mar 2010.

Jesse H. de Leon, USDA-ARS-Molecular BioControl Laboratory, Weslaco, Texas. Visited facilities, gave two seminars, and discussed potential collaboration on *Tamarixia radiata* against the Asian citrus psyllid, *Diaphorina citri* and on *Hypogeococcus pungens*. 7-9 June 2010.

Octavio Bruzzone, INTA Bariloche, Argentina. He gave a talk on “A Bayesian approach to establishing the accuracy of different experimental designs in choice and specificity tests using the Thurstone model”. 18 June 2010.

Regional Security Officer, Facilities Maintenance Manager, Management Officer and General Services Officer from the US Embassy Buenos Aires. They visited SABCL to inspect the buildings. 15 Jun 2010.